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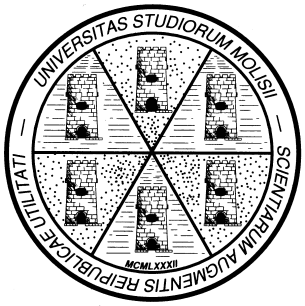

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Conflicts of Interest in Financial Markets: Evidence from Bond Underwriting in the Nineties

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Abstract

This paper presents some new evidence on the conflict of interest that may arise when banks underwrite corporate securities and sell them to their customers. Two alternative views are confronted: a) that commercial banks possess private information on the financial condition of their clients and so perform better screening (the certification hypothesis); and b) that commercial banks might convert loans to firms in financial difficulties into bonds marketed to unsuspecting clients (the 'naïve investor' hypothesis). The empirical analysis compares the default rates between 2000 and 2002 of a sample of more than 5,000 securities issued from 1991 to 1999. Our results show that, on average, securities underwritten by investment houses and by commercial banks had the same probability of default. However, investment-grade issues underwritten by commercial banks had a lower probability of default than those underwritten by investment houses, while the reverse was true for non-investment-grade issues. Based on this latter result, it is not possible to refute the 'naïve investor' hypothesis, as instead in Kroszner and Rajan (1994).

JEL-classification: G21, G24, N22
Keywords: Conflicts of interest, Glass-Steagall Act, Securities underwriting, Default performance

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1 Introduction

One of the main undesirable features of information asymmetries is the potential for conflicts of interest. Two recent events have brought the issue to the attention of academics, policymakers and the general public. The first was the repeal, with the Gramm-Leach-Bliley Act of 1999, of the 1933 Glass-Steagall Act, which for nearly 70 years had banned U.S. commercial banks from the business of underwriting corporate securities. The rationale for the Glass-Steagall Act was to eliminate the conflict of interest inherent in the possibility that banks might convert loans to firms in financial distress into securities to be sold to 'naive' clients. The second event that brought conflicts of interest to the fore was the collapse in stock market prices at the turn of the century and the following surge in corporate scandals.

A recent report produced jointly by the International Center for Monetary and Banking Studies and the Centre for Economic and Policy Research defines conflicts of interest in the financial sector as arising "when a financial service provider, or an agent within such a service provider, has multiple interests which create incentives to act in such a way to misuse or conceal information needed for the effective functioning of financial markets" (Crockett et al., 2003, p. 5). The report draws attention to four major areas of potential conflicts of interest: underwriting and brokerage, auditing and consulting, credit assessment and consulting, and universal banking. Each of these issues has been analyzed extensively by academics and policy makers alike.[1]

In this paper we present some new empirical evidence on the potential conflicts of interest, focusing on the problem of banks underwriting corporate securities and selling them to their customers. With respect to the taxonomy set out

[1] Crockett et al. (2003) offers a very a rich and rigorous discussion of the literature analyzing conflicts of interests in financial markets and puts forward some quite bold policy prescriptions.

above, such a conflict is similar to that arising when the same agent acts as both underwriter and financial consultant, and is therefore potentially relevant even when investment banking is separated from commercial banking. However, the strength of the Glass-Steagall prescriptions and the Act's long duration reveal this conflict of interest is perceived to be drastically more severe when commercial banks are involved. Such a distinction between investment and commercial banks implicitly suggests that they have different clienteles, who may deserve different degrees of protection. The rationale for banning commercial banks from the underwriting business is in fact to be found in the need to protect their clients, who are presumed to be less able to evaluate the quality of securities issues. This is what Kroszner and Rajan (1994) call the 'naïve investors' hypothesis. A contrary thesis is that the banks are better informed than investment houses on the financial conditions of their clients and are thus able to provide better certification of the securities that they underwrite.

Recent empirical studies show that in the pre-Glass-Steagall period securities underwritten by commercial banks had lower probability of default and lower interest rates and that those underwritten after 1987 by Section 20 subsidiaries of commercial banks also had lower interest rates.[2] These results are consistent with two hypotheses, not mutually exclusive. One is that markets are aware of the potential conflicts of interest, thus obliging commercial banks to underwrite only high-quality corporate securities; the second is that investors recognize the stronger certification ability of commercial banks. What is still missing in the literature, to our knowledge, is a comparison of the rates of default on securities issued by investment houses and by commercial banks in the Nineties. This is what we provide in this paper.

Our empirical results shed some new light on conflicts of interest in the underwriting business. We examine more than 5,000 securities issues underwritten

[2] During the Nineties, a number of studies compared the characteristics of securities underwritten by commercial and by investment banks, respectively. A brief discussion is presented in section 2; a richer survey is in Crockett et al. (2003).

by investment houses and commercial banks between 1991 and 1999. We find that investment-grade issues underwritten by commercial banks had a lower probability of default than those underwritten by investment houses, but the reverse was true for non-investment-grade issues. Based on these results it is not possible to reject the 'naïve investor' hypothesis.

The paper is organized as follows. Section 2 briefly describes the institutional environment in the U.S. market for corporate securities underwriting since the introduction of Section 20 subsidiaries. Sections 3 and 4 survey the results of the literature and describe the hypotheses under investigation. Section 5 describes the data used in the empirical analysis. Section 6 presents the results of the econometric analysis. Section 7 provides some interpretation and presents some additional robustness checks. Section 8 concludes.

2 The institutional framework

The stock market boom of the late 1920s generated a surge in IPOs, and commercial banks swarmed into the securities underwriting business. The uncertain legal status of the bond departments of national banks was clarified by the McFadden Act in 1927, which expressly allowed them to underwrite securities (Peach, 1941), with a similar organization to that established in the Nineties for Section 20 subsidiaries (Crockett et al., 2003).

The public outcry following the stock market crash of 1929 prompted a Senate Banking and Currency Committee inquiry known as the Pecora hearings,[3] to ascertain whether commercial banks had sold unsound securities to their customers, thus converting potential bad loans into security issues. The results were cited by advocates of the Glass-Steagall Act of 1933, which prohibited "commercial banks

[3] Ferdinand Pecora was legal adviser to the Senate sub-commission investigating conflicts of interest.

from underwriting, holding or dealing in corporate securities, either directly or through securities affiliates" (Kroszner and Rajan, 1994, p. 810).[4] In particular, Section 20 of the Act ordered that "no member bank could be affiliated with any corporation, association or business trust engaged principally in the issue, flotation, underwriting, public sale, or distribution at wholesale or retail through syndicate participation of stocks, bonds, debentures, notes or other securities".[5]

Between 1933 and 1963 Glass-Steagal was fully enforced by the Fed (Cornett et al., 2002). Starting in the mid-1960s, however, banks went back to the security business, and eventually gained court authorization to underwrite municipal bonds, commercial paper and mortgage backed securities.

The progressive increase in competition from financial markets abroad prompted the Fed, in April 1987, to allow U.S. commercial bank holding companies to establish affiliates under Section 20 authorized to underwrite corporate securities. Two years later these affiliates were allowed to underwrite commercial paper and corporate debt; in 1990 permission was extended to equities. All these activities were allowed as long as they did not generate more than 5 per cent of the bank's total revenues (the ceiling was raised to 10 per cent in 1989 and 25 per cent in 1996). A further erosion of the Glass-Steagall restrictions came in 1997, when bank holding companies were allowed to simply buy investment houses as Section 20 subsidiaries, without having to establish them.

Finally, in 1999 the Gramm-Leach-Bliley Financial Services Modernization Act repealed the legal barriers between commercial banks, investment houses and insurance companies.

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[4] The recent literature (starting from the seminal paper by Kroszner and Rajan, 1994) has pointed out that the examples provided in the congressional hearings were strongly biased against the behavior of commercial banks (see also Crockett et al., 2003). For an opposite position see, among others, Carosso (1970).

[5] For a careful analysis if the institutional environment in the pre-Glass-Steagall period see Peach (1941), Carosso (1970) and Benston (1990).

3 The literature

The progressive loosening of the Glass-Steagall constraints and the policy debate that led to its repeal generated a number of empirical studies analyzing the pros and cons of the separation between commercial banks and investment houses. Two main hypotheses were scrutinized. Bank underwritten securities might be riskier, because of the conflict of interest between lending and underwriting. Alternatively, they could be safer, because lending banks might be better informed on their clients than investment houses and thus offer more credible certification.[6]

The empirical studies can be divided into two major categories: those studying the pre-Glass-Steagall era and those analyzing the behavior of investment houses and Section 20 subsidiaries since the 1987 reform.

In a seminal paper, Kroszner and Rajan (1994) study the characteristics of a sample of industrial bonds underwritten by affiliates of commercial banks and investment houses in the first quarters of the years between 1921 and 1929. They obtain two major findings. First, the bonds originated by affiliates were ex-ante safer – they had better ratings – which shows that markets were aware of potential conflicts of interest and responded by imposing a 'lemons market' discount on more information-intensive issues, so that commercial banks could underwrite almost exclusively safer securities. Second, non-investment-grade bonds underwritten by commercial banks affiliates had fewer cumulative defaults in the period 1930-1940, both in number and in total value, and investment-bank underwritten bonds defaulted earlier in their life than affiliate-originated issues. The evidence thus tells against the thesis that commercial banks were systematically defrauding their clients and disposing of bad loans.

[6] Theoretical studies are fewer. A major exception is Puri (1999).

Puri (1994) and Ang and Richardson (1994) refine the analysis of Kroszner and Rajan (1994) and strengthen their results. Puri takes a narrower definition of issues underwritten by affiliates of commercial banks and concentrates on the period subsequent to the McFadden Act of 1927, which explicitly allowed affiliates to underwrite corporate securities, and confirms that affiliate-originated issues have a lower probability of default.[7] Ang and Richardson (1994), considering a wider set of risk measures (ex-ante yield, default experience, ex-post market prices of bonds, stock prices of issuing companies), confirm that there is no evidence that issues underwritten by commercial bank security affiliates performed worse than those underwritten by investment houses.

Puri (1996) provides further evidence for the hypothesis that markets are aware of the potential conflicts that should require a 'lemons market' discount, but that they also consider the positive effect of better information. Comparing two samples of securities underwritten in the pre-Glass-Steagall period, she finds that on average those originated by investment houses carry higher yields, confirming that commercial banks' greater certification ability outweighs the 'lemon' discount.

An alternative explanation of Puri's evidence is that commercial banks have greater market power relative to their less sophisticated clientele, and so can place securities at lower prices than investment houses. But this is at odds with the finding of Kroszner and Rajan (1997) that securities issued by internal departments of commercial banks, for which the potential conflict of interest is even more severe, carry higher interest rates than those underwritten by securities affiliates. By confirming that markets consider an affiliate structure as an effective commitment mechanism, this result provides indirect evidence of the market's ability to discern – and price – even the slightest possibility of conflicts of interest.

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[7] Kroszner and Rajan (1994) define bond issues as underwritten by commercial banks when any such institution is included in the syndicate. Puri (1994) includes only those where the affiliate is sole or lead underwriter.

Studying the Section-20 period, Gande et al. (1997) find clear evidence in favor of the certification hypothesis; securities underwritten by Section 20 subsidiaries of bank holding companies have lower interest rates, and more markedly so for lower-rated issuers.[8] Moreover, commercial banks tend to underwrite smaller issues, offering further indirect confirmation of their greater ability to acquire and process information.[9]

Additional evidence is provided by analysis of different markets and countries.[10] Studying the industrial revenue bond market, Saunders and Stover (2004) find that when commercial banks act either as underwriters or as credit guarantors, interest rate spreads to the issuers can even be larger than average; only when the same bank offers both services jointly are spreads narrower, consistent with a limited 'certification effect' of commercial bank underwriting. Studying the Canadian corporate bond market, Hebb and Fraser (2002) show that yields on issues underwritten by commercial bank affiliates are lower than those on issues originated by independent investment banks, suggesting that any conflict-of-interest effect is dominated by the 'certification effect'. In Japan, before the Second World War when commercial and investment banking were not separated, Konishi (2002) finds no differences in the initial yields in bonds underwritten by commercial banks and investment houses, but lower default rates for the former. Gompers and Lerner (1999) show that IPOs of investment houses that hold stakes in issuing firms through a venture capital subsidiary are less information-sensitive but show equal or better

[8] Roten and Mullineaux (2002) find little evidence of differences in the yield spreads between bonds underwritten by commercial banks and investment banks between 1995 and 1998.

[9] Gande et al. (1999) provide further evidence on the effects of the entry of Section 20 subsidiaries in the security underwriting market, showing that they have favored the reduction of underwriter spreads and ex-ante yields, and proportionally more so for lower-rated and smaller issues.

[10] A parallel strand of literature has studied the effects of the introduction of Section 20 subsidiaries on bank risk and profitability. Cornett et al. (2002) show that pre-tax cash flow performance of bank holding companies improves significantly in the three years after they establish a Section 20 subsidiary and that their overall riskiness is unchanged.

ex-post performance than IPOs underwritten by investment houses with no participations; again, this confirms the hypothesis that the market is aware of potential conflicts of interest and neutralizes the effects. Ber et al. (2000), studying IPOs in Israel, find that issuing firms whose equity was underwritten by a commercial bank affiliate had worse stock market performance but better accounting profitability. Drucker and Puri (2004) show that when an underwriter lends to an issuer around the time of an IPO (a practice known as 'tying'), the firm obtains a discounted interest rate on the loan, and that the discount is greater for the more information-sensitive non-investment-grade issues; this is consistent with a certification effect.[11]

4 Empirical methodology

Our basic empirical model replicates Kroszner and Rajan (1994), verifying whether securities underwritten by commercial banks have a higher ex-post probability of default than those underwritten by investment houses. We estimate the following binary choice model, using a logistic specification:

$$Pr\,(Y_{ijt} = k) = f\,(X_{it}, D_j, T_t), \qquad k = 0, 1; \qquad (1)$$

where: Y_{ijt} = 1 if security issue i underwritten by bank j at time t defaulted before maturity and Y_{ijt} = 0 otherwise; X_{it} are characteristics of the issue i at time t (i.e., size, rating, maturity, gross spread over benchmark, issuer's sector of economic activity); D_j is a dummy taking the value of 1 if there is at least one Section 20 subsidiary among the banks leading the underwriting syndicate; T_t are year dummies. Unlike Kroszner and Rajan (1994), we also include information on the issue's gross spread.

[11] A related issue is studied by Narayanan et al. (2004), who show that, in order to signal that they are not willing to exploit potential conflicts of interest to their advantage, banks acting as underwriters to their clients predominantly co-manage with a high reputation non-lending institution.

All standard errors are calculated using the procedure of White (1980) to correct for heteroskedasticity and taking into account that bonds issued by the same borrower are not independent observations.

In order to check the robustness of the results of the basic specification, we also adopt two additional specifications. First, in order to account more carefully for the different duration of the bonds included in our sample, we estimate a survival-time data model by the method of proportional hazards regression first proposed by Cox (1972):

$$\lambda(t_i) = e^{-(\beta' x_i + \gamma D_i)} \lambda_0(t_i) \qquad (2)$$

where: λ_0 is the 'baseline' hazard and X_i are characteristics of the issue i (i.e., size, rating, maturity, gross spread over benchmark, issuer's sector of economic activity) affecting hazard rate and D_i is a dummy taking the value of 1 if there is at least one Section 20 subsidiary among the banks leading the underwriting syndicate.

Second, in order to correct for the bias induced by the use of a parametric specification of the relationship between the probability of default and the type of subscribing bank, we adopt a propensity score matching method (Rubin, 1979).[12] In practice, we split our sample between bonds underwritten by commercial banks ('treated' observations) and bonds underwritten by investment banks ('untreated' or 'control' observations), match each 'treated' observation with a set of 'untreated' observations (chosen so as to be as similar as possible to the 'untreated' ones), and finally compare the probability of default between the two groups. More formally, defining PD_I as the probability of default of bonds underwritten by investment banks,

[12] These methods, first introduced in the medical sciences, are now becoming increasingly popular also in economics. They lend themselves naturally to our analysis, because they focus precisely on non-random selection. For a recent survey, see Blundell and Costa Dias (2002). The routine we used for estimations is PSMATCH2, a Stata module by Leuven and Sianesi. (2003).

PD_S that of bonds underwritten by Section 20 subsidiaries and X a set of characteristics of each bond, this procedure amounts at estimating:

$$\alpha \equiv E\,[Pr(D_I) - Pr(D_S)|\,X] \tag{3}$$

5 Data and summary statistics

Data on bond issues are from SDC, a dataset on securities issues that gives, among other information, date of issuance, yield to maturity, credit rating, size, maturity and issuer's sector of economic activity. It is compiled from regulatory filings, news sources, company press releases, and prospectuses. We selected all U.S nonconvertible fixed-rate corporate bonds issued between January 1, 1985, and December 31, 1999, and with final maturity longer than December 31, 1999. In total, we have 6,888 issues (Table 1).

Information on defaults is from the monthly "Moody's Default Report". Our sample consists of defaults between January 2000 and December 2002. In total, 76 companies issuing fixed-rate nonconvertible bonds in our sample defaulted, for a total (applying the cross-default hypothesis) of 271 issues.[13]

The list of Section 20 banks is from Cornett et al. (2002). In total we have in our sample 1,263 issues underwritten by Section 20 subsidiaries. Since the first issuance was in 1991, in the regression analysis we dropped all bonds issued before 1991, to avoid any possible bias. Therefore, our sample consists of 5,883 issues; the proportion of corporate debt issues underwritten by commercial banks is 21.5 per cent (19.3 per cent in dollar terms, showing that the issues underwritten by commercial banks are of smaller average size; Table 1). Commercial banks' share

[13] Of course, not all security-issues by the same firm are often underwritten by the same syndicate. Missed interest or principal payment made up the majority of defaults. Less frequent reasons of default are filing for Chapter 11, filing for bankruptcy, distressed exchange and grace period default.

rose from 3 per cent in 1991 to 29 per cent in 1995, and then remained substantially stable to 1999.

The average default rate in our sample is 4.3 per cent (5.4 per cent in dollar terms, showing that defaulted issues have a larger size than the average). The default rate for bonds underwritten by Section 20 subsidiaries (3.5 per cent) is lower than that for investment houses (4.5 per cent).

For non-investment-grade bonds the picture is different. We have 1,021 such issues in our sample (Table 1), of which 838 were underwritten by investment houses (Table 2) and 183 by commercial banks (or 17.9 per cent of the total, which compares with 22.4 for investment grade bonds). For non-investment-grade bonds, the default rate is higher for commercial banks than for investment houses (10.9 as against 6.7 per cent).

Table 2 reports a complete breakdown of our sample by size, original maturity, issuer's sector of economic activity by SIC codes, and Moody's credit rating.[14] Commercial banks underwrite a relatively larger share of smaller issues (less than $ 75 million). As noted above, Panel C shows that on investment-grade issues the default rate is higher for investment houses, while on non-investment-grade issues it is higher for commercial banks. In Section 6 we present the results of a more formal analysis of the default probability of securities issued by investment houses and commercial banks.

[14] We chose Moody's credit ratings to be consistent with our source of information on corporate defaults. Morgan (2002) shows that disagreements in rating assignments are limited in the case of corporate securities. The results of the econometric analysis are confirmed also using Standard and Poor's ratings.

6 Regression results

6.1 Basic specification

Panel A of Table 3 reports the results of the estimation of the basic specification of equation (1). Estimates are conducted on a sample of 5,337 security issues, from 1991 to 1999.[15] The regression includes time and industry dummies, as well as the issue's size, gross spread with respect to the benchmark, maturity and rating.

The hypothesis that security issues underwritten by commercial banks have a higher default probability is rejected. The coefficient of the dummy variable for issues underwritten by commercial banks is not significantly different from zero. On average, the two groups have the same probability of underwriting a security that eventually defaulted.

All the control variables have a significant effect on the probability of default. Panel A of Table 3 shows that issues with lower ratings, shorter maturities and higher interest rate spreads are more likely to default. Interestingly, larger issues also have a higher probability of default. This result is not obvious, since the larger issues are usually those of larger borrowers, which typically have lower risk.

Although on average securities underwritten by investment houses and commercial banks have the same probability of default, it could be that the two types of underwriters have different relative ability to screen certain categories of issues.

Following Kroszner and Rajan (1994), we try to identify the impact of underwriter type on issues of different quality rating by including an interaction term

[15] Of the total number of issues in the period (5,883; Table 1), 81 observations are dropped because we do not have any defaults for firms with a rating Aaa, and 445 are dropped because we do not have defaults for firms with one-digit SIC code 6 (Table 2), i.e. firms operating in regulated industries.

if a commercial bank underwrites a bond rated below investment-grade.[16] This alternative specification, reported in Panel B, tells a different story. The coefficient of the dummy variable identifying commercial banks is now negative and significantly different from zero at the 10 per cent level, but that of the interaction term between the dummy for commercial banks and that for non-investment-grade securities is positive, significantly different from zero, and twice as large. Panel B also shows that the coefficients of the control variables included in the regression are virtually unchanged.[17]

In summary, non-investment-grade securities underwritten by bank subsidiaries have a higher probability of default, while the opposite is true for investment-grade securities.

The same results are obtained considering a more parsimonious specification, identical to that adopted by Kroszner and Rajan (1994), where only investment-grade and non-investment-grade classes of ratings are included as controls (Table 3, Panel C).

In order to test the robustness of our results to the potential endogeneity problems that might be present if the interaction term was correlated with the error term, we split our sample into two sub-samples and estimate the model in equation (1) separately for investment-grade and non-investment-grade issues, excluding unrated securities. The results reported in Table 4 confirm the previous findings. Investment-grade securities underwritten by commercial banks have a lower probability of default than those underwritten by investment houses (although the

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[16] Unlike Kroszner and Rajan (1994), we cannot estimate the interaction term between bonds underwritten by Section 20 subsidiaries and unrated bonds, since none of the 7 unrated bonds underwritten by subsidiaries defaulted (Table 2).

[17] Our sample includes only issues that defaulted before the end of 2002, although they might have had longer maturity. In theory, if securities with longer maturity were all eventually going to default, and if commercial banks had underwritten a larger share of defaulting securities with shorter maturity, this might introduce a bias in our results. In an unreported regression we

coefficient is significantly different from zero only at the 12 per cent level, panel A), but the reverse is true in the case of non-investment-grade (the coefficient is significant at the 6 per cent level, panel B). Moreover, the difference is statistically significant at the 5 per cent level (panel C). On the contrary, the coefficients of the control variables are not significantly different in the two sub-samples.[18]

6.2 Duration model

Table 5 presents the results of the survival-time data model described by equation (2). For defaulted bonds, we define the duration as the period from the date of issue to the date of default; for non-defaulted bonds, as the period from the date of issue to that of repayment. For bonds still performing at December 31, 2002, the end of our observation period, we adopt two alternative definitions: in Panel A we define the duration as the original maturity (thus implicitly assuming that no bonds defaulted after December 31, 2002), in Panel B, as the period from the date of issue to the end of our observation period. In the latter case, we control for censoring, namely the possibility that some bonds might have defaulted after December 31, 2002.[19] Both regressions include as control variables calendar year, issue's maturity, rating, size and gross spread with respect to the benchmark, and a dummy for the issuer's industry.[20]

The results of Panel A show that the coefficient of the dummy for investment-grade securities underwritten by Section 20 subsidiaries is negative, but not

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have concentrated on issues with maturity between January 1, 2000, and December 31, 2002, finding that our results are, if anything, stronger than for the entire sample.

[18] In unreported regressions, we also re-estimated equation (1) for the two sub-samples, excluding rating dummies from the explanatory variables; the results are unchanged.

[19] Although this was indeed a possibility, we know that defaults have been very rare in 2003 and, so far, in 2004.

[20] The total number of observations is lower than that used in the basic specification because the information needed for the estimation of the survival time data model are not available for all securities.

significantly different from zero. The coefficient of the dummy for non-investment-grade securities underwritten by Section 20 subsidiaries is positive and significantly different from zero at the 10 per cent level. At each point in time, non-investment-grade securities underwritten by Section 20 subsidiaries are then more likely to default within one period than those underwritten by investment banks. This evidence is a confirmation of the results obtained with the basic specification.

The results in Panel B are similar to those of Panel A. Although the coefficients of the dummies for securities underwritten by Section 20 subsidiaries are never significantly different from zero, their sign is unchanged and, most important, the difference between the two remains statistically significant at the 5 per cent level.

6.3 Propensity score matching

Table 6 reports the results obtained using the propensity score matching method, where the matching sample is constructed choosing the nearest neighbors.[21]

Panel A shows that the 'average treatment on the treated' effect (ATT) for securities underwritten by Section 20 subsidiaries (the column labeled 'treated'), and by investment banks ('controls') are substantially identical. Similar results are obtained for investment-grade securities (panel B). However, for non-investment-grade securities (panel C), ATT for 'treated' observations is equal to 0.11, more than double that for the control sample (0.05). Moreover, the difference between the two effects is statistically significant at the 5 per cent level.[22]

The results obtained with alternative statistical methodologies lend therefore support to those of the basic specification.

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[21] We found similar results using the kernel weights method suggested by Heckman et al. (1997).

[22] Standard errors are computed by bootstrapping with 200 repetitions and significance by using the bias-corrected confidence interval.

7 Discussion and robustness checks

Kroszner and Rajan show "that affiliate-underwritten issues defaulted statistically significantly less often than ex ante similar investment-bank-underwritten-issues. The differences in default rates are greatest for the non-investment-grade issues. Clearly, this refutes the naïve-investor hypothesis, which would suggest significantly higher default rates among affiliate-originated bonds, especially for low quality issues".[23]

Our own results tell quite a different story. After controlling for bonds' characteristics, such as ratings and interest rates, we find indeed that high quality issues underwritten by commercial banks have a lower default rate than on those underwritten by investment houses. However, we also find that low quality issues underwritten by commercial banks have a higher default rate than those underwritten by investment houses. Based on this latter result, it is not possible to refute the 'naïve investor' hypothesis. However, before drawing any conclusion on this issue, we discuss in detail two alternative explanations of our results, not directly related to conflicts of interest.

7.1 Rating attribution

The first alternative explanation of the higher default rate on lower quality issues underwritten by commercial banks is that the ratings assigned to bank-originated securities were systematically different from those of bonds underwritten by investment houses. This might happen for two different reasons. On the one hand, if rating agencies were unable to gather all the information necessary to discriminate between different securities, while they rationally expected that some commercial banks might misrepresent the issues' quality, they would tend to assign an inferior rating to bonds originated by commercial banks. In other words, rating agencies

would apply a 'lemon' discount, as noted by Kroszner and Rajan (1994). Alternatively, agencies might assign better ratings to securities underwritten by Section 20 subsidiaries because they – and the market – believe that on average commercial banks have private information on the issuer that permits better assessment of the risk (the certification effect).

While a 'lemon' discount on Section-20-originated issues would not imply a bias against our results, this does not hold if there is a systematic difference in rating assignments due to the certification effect.[24] Under this second hypothesis, Section-20-originated securities would be assigned better ratings than those originated by investment houses. Non-investment-grade issues underwritten by commercial banks would then be of lower quality and, as such, would have a higher default rate as we found in our empirical analysis. Although this hypothesis still implies a misperception by the rating agencies – and the market – on the riskiness of bank-originated securities, it would also imply that our results offer no indication concerning the existence of conflicts of interest in the underwriting business.

To test the hypothesis that our findings were driven by a systematic bias in ratings attribution, we split the sample on the basis of an alternative measure of riskiness, the bonds' yields, and verified whether we obtained different results. In order to do so, we ranked the securities in our sample with respect to their spread over the benchmark, and we split it at 210 basis points (in proximity of the observation with a position equal to the number of investment-grade securities).[25]

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[23] Kroszner and Rajan (1994), pp. 819-820.

[24] In presence of a 'lemons market' discount, affiliate-originated issues would be systematically rated lower than issues underwritten by commercial banks and therefore, within each rating class, they should have on average a lower probability of default (see Kroszner and Rajan, 1994, pp. 822-823).

[25] The purpose of this procedure was to obtain two samples of size comparable to that of investment-grade and non-investment-grade securities. Although ratings are one of the major determinants of the spread over the benchmark, we found 182 securities rated non-investment-grade for which the spread over the benchmark was below the splitting value.

Table 7 replicates table 4, but splitting the sample between high-yield on and low-yield securities, as described above. Panel A shows that the coefficient of the dummy variable for investment-grade commercial banks' issues is negative and significantly different from zero at the 5 per cent level, implying that on average bank-originated issues have a lower probability of default. Once again, the reverse is true in the case of non-investment-grade securities (the coefficient is positive and significant at the 5 per cent level, panel B). Moreover, the difference is statistically significant at the 1 per cent level (panel C).[26]

The evidence is therefore against the hypothesis that our results are due to a bias in rating assignments.

7.2 Entry

A second possible explanation of the higher default rate for lower-quality bonds underwritten by commercial banks is that in order to gain access to the underwriting market, Section 20 subsidiaries initially concentrated on riskier issues – for which there was less competition from investment houses – and only later began to offer their services to safer issuers as well. For example, banks might have started giving access to the bond market to smaller and riskier issuers that had previously been excluded (Gande et al., 1999).

According to this explanation, the difference in the default probability should have been greater for bonds issued in the first half of the Nineties than for those issued later on. To test this hypothesis, we split our sample into two sub-samples, 1991-1995 and 1996-1999. The results, reported in Table 8, show that neither for investment-grade securities (Panel B) nor for non-investment-grade securities (Panel

[26] In additional, unreported, regressions we verified that our results are also confirmed: a) using Standard and Poor ratings; and b) artificially classifying each bank underwritten security rated Ba1-Ba3 as Baa1-Baa3, as it would be the case of rating agencies believed in the 'certification hypothesis'.

C) does the coefficient of the dummy variable for commercial banks differ significantly in the two sub-periods.[27] Thus the data reject the hypothesis that the higher default rate on bonds underwritten by commercial banks' subsidiaries for lower quality securities depends on an aggressive entry strategy.

8 Conclusions

This paper presents some new empirical evidence on the conflict of interest implicit in banks underwriting corporate securities and selling them to their customers. We compare the rates of default for securities issued by investment houses and by commercial banks in the Nineties. Two alternative views are confronted: a) that commercial banks might convert loans to firms in financial difficulties into bonds marketed to unsuspecting clients (the 'naïve investor' hypothesis); and b) that commercial banks possess private information on the financial condition of their clients and so perform better screening (the certification hypothesis).

The empirical analysis consists in calculating the default probability in the years 2000-2002 of more than 5,000 security issues underwritten by U.S. investment houses or commercial banks between 1991 and 1999. On average, the probability of underwriting a security that eventually defaulted was equal in the two groups. However, studying riskier and less risky securities separately – splitting the sample between investment-grade and non-investment-grade bonds – higher quality issues underwritten by banks have a lower probability of default than those underwritten by investment houses, while the reverse is true for lower quality issues.

Two explanations of our results not related to conflicts of interest are considered. First, rating agencies might be systematically assigning better ratings to the bank-underwritten bonds, recognizing their greater certification ability. We

[27] Similar results are obtained considering two sub-samples of bonds issued in 1991-1994 and in 1995-1999.

therefore use a different measure of riskiness based on bonds' yield. Also in this case – splitting the sample between low-yield and high-yield bonds – lower quality issues underwritten by commercial banks had a higher probability of default, confirming our previous results. The second alternative we considered was that the greater riskiness of the lower quality issues originated by banks stemmed from a strategy for entry into the underwriting market. This interpretation is also rejected by the data.

The result that lower quality bonds underwritten by commercial banks defaulted more frequently than those underwritten by investment houses – partially in contrast with the findings of the studies on the pre-Glass-Steagall period – doesn't allow us to refute the 'naïve investor' hypothesis. At the same time, our analysis does not suffice to claim that commercial banks have been abusing their private information, since we do not control whether there was a lending relationship between the defaulting borrowers and the underwriting banks. Moreover, it is likely that the costs of the additional defaults are lower than the benefits of the larger and more competitive market favored by the entry of commercial banks in the underwriting business, as shown by Gande et al. (1999). Still, one may expect that market participants will adapt their future behavior, rationally accounting for the differences in default probabilities that showed up during the first severe downturn since the liberalization of the underwriting business.

Table 1

Number and Volume of Securities Issued by Year, by Type of Underwriter and by Default

The table gives the number and the total values of the securities in our sample – issued between January 1, 1991 and December 31, 1999 and with maturity longer than December 31, 1999 – distinguishing those that defaulted between January 1, 2000, and December 31, 2002, and those underwritten by investment houses and by commercial banks. Data on security issues are from Security Data Corporation, defaults are from Moody's Default Report. Investment-grade ratings are those classified by Moody's between Aaa and Baa3. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002).

	Total market		Market Share of Bank Underwritings		Default Rate			
					Investment Houses		Banks	
	Number of issues	Amount (m$)	Number of issues	Amount (m$)	Numb. issues	Amou. (m$)	Num. iss.	Amou. (m$)
Panel A: Total Securities Issued								
1985	139	17816			5.8	8.5		
1986	302	46392			4.0	5.0		
1987	148	22109			4.1	6.6		
1988	130	23008			3.8	4.8		
1989	143	28739			2.8	1.9		
1990	163	25185			3.1	3.2		
1991	344	59915	3.2	2.5	8.7	5.9	9.1	11.9
1992	585	97580	5.5	4.8	4.2	4.7	3.1	3.2
1993	919	148674	11.4	9.6	4.5	5.7	2.9	6.5
1994	336	54130	20.8	18.9	4.1	4.9	7.1	8.6
1995	574	91163	29.8	21.2	5.5	4.0	0.6	1.0
1996	599	98763	29.7	25.0	2.6	3.1	2.8	4.5
1997	734	103765	28.1	23.1	4.9	7.8	1.9	1.7
1998	1057	182868	27.9	24.8	3.5	7.8	4.4	4.4
1999	715	150615	27.3	30.8	4.0	5.3	5.6	5.4
85-99	6888	1150723			4.4	5.5		
85-90	1025	163250			3.9	4.7		
91-99	5863	987474	21.5	19.3	4.5	5.7	3.5	4.4
Panel B: Investment Grade Securities								
85-90	864	128081			4.3	5.4		
91-99	4788	778897	22.4	20.0	4.0	5.1	2.2	2.7
Panel C: Non Investment Grade Securities								
85-90	145	34727			2.1	2.3		
91-99	1021	204579	17.9	16.5	6.7	7.8	10.9	12.3

Table 2

Securities Issued by Type of Underwriter, by Size, by Maturity, by Industry and by Rating

The table classifies the number and the total values of the securities in our sample – issued between January 1, 1991, and December 31, 1999, and with maturity longer than December 31, 1999 – distinguishing those that defaulted between January 1, 2000, and December 31, 2002, and those underwritten by investment houses and by commercial banks, with a breakdown by size, original maturity, issuer's sector of economic activity by SIC codes, Moody's credit ratings. Data on security issues are from Security Data Corporation, defaults are from Moody's Default Report. Investment-grade ratings are those classified by Moody's between Aaa and Baa3. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002).

Breakdown	**Panel A: Investment House Issues**				**Panel B: Bank Issues**				**Panel C: Default rate**	
	Non-Defaulted Issues		**Defaulted Issues**		**Non-Defaulted Issues**		**Defaulted Issues**		**Investment Houses**	**Banks**
	Number	Amount (m$)	Number	Amount (m$)	Number	Amount (m$)	Number	Amount (m$)	Number	Number
Total	4393	171	207	218	1219	149	44	190	4.5	3.5
Size										
Greater than $300m	445	560	35	586	132	563	8	417	7.3	5.7
$75m to $300m	2775	167	128	180	585	166	25	187	4.4	4.1
Less than $75m	1173	33	44	36	502	21	11	31	3.6	2.1
Maturity										
Less than 5 years	174	103	24	160	78	99	9	36	12.1	10.3
5 to 15 years	2494	172	103	249	754	158	24	215	4.0	3.1
Over 15 years	1725	176	80	195	387	144	11	262	4.4	2.8
Industry										
0	14	125	5	195	7	95			26.3	
1	274	184	15	314	96	171	5	220	5.2	5.0
2	682	204	4	169	219	160	7	214	0.6	3.1
3	530	201	22	172	222	162	7	224	4.0	3.1
4	1914	162	87	276	343	147	9	279	4.3	2.6
5	330	194	35	160	91	190	6	214	9.6	6.2
6	313	81			132	52				
7	259	154	31	139	96	190	10	41	10.7	9.4
8	77	178	8	140	13	94			9.4	
Rating										
Aaa	76	229			5	275				
Aa1- Aa3	512	189	9	200	82	172			1.7	
A1- A3	1529	157	28	237	470	132	4	396	1.8	0.8
Baa1- Baa3	1451	164	110	210	492	150	20	132	7.0	3.9
Ba1- Ba3	363	213	17	287	63	195	9	196	4.5	12.5
B1- B3	406	193	35	226	98	175	11	216	7.9	10.1
Caa1- Caa2	13	122	4	153	2	93			23.5	
Not Rated/Available	43	66	4	56	7	131			8.5	

Table 3

Effect of Type of Underwriter on Security Defaults – Logit Model

The table presents the results of logit regressions of the probability of default of securities underwritten by investment houses and commercial banks (equation 1 in the text). The dependent variable is a dummy (1 if the security defaults between January 1, 2000, and December 31, 2002). The regressions include time and industry dummies (not reported). Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). White (1980) heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent.

	Panel A:	Panel B:	Panel C:
Variables	With no interactions	With interactions	à la Kroszner and Rajan
Bank Underwriting	-0.112	-0.544 *	-0.466 *
	(0.217)	(0.282)	(0.276)
Non-Investment Grade			-0.438
			(0.381)
Unrated	-0.623		0.162
	(0.843)		(0.785)
Bank*Non-Investment Grade		1.269 ***	1.144 **
		(0.446)	(0.444)
Size (log value)	0.267 ***	0.278 ***	0.329 ***
	(0.074)	(0.076)	(0.075)
Gross spread	0.002 ***	0.002 **	0.004 ***
	(0.001)	(0.001)	(0.001)
No. of Observations	5,337	5,333	5,414
R-Square	0.155	0.161	0.118

Table 4

Effect of Type of Underwriter on Security Defaults – Logit Model (sample split between investement and non-investment grade securities)

The table presents the results of logit regressions of the probability of default of securities underwritten by investment houses and commercial banks (equation 1 in the text), splitting the sample between investment-grade and non-investment-grade issues. The dependent variable is a dummy (1 if the security defaults between January 1, 2000, and December 31, 2002). The regressions include maturity, time, rating and industry dummies (not reported). Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). White (1980) heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent.

	Panel A:	Panel B:	Panel C:
Variables	Investment Grade	Non-Investment Grade	Difference test
Bank Underwriting	-0.463	0.660 **	6.25 **
	(0.301)	(0.331)	
Size (log value)	0.298 ***	0.351 *	0.06
	(0.094)	(0.199)	
Gross spread	0.005 **	0.002	1.58
	(0.002)	(0.001)	
No. of Observations	4,269	993	
R-Square	0.229	0.126	

Table 5

Effect of Type of Underwriter on Security Defaults - Duration Model (sample split between investement and non-investment grade securities)

The table presents the results of a survival-time data model by the method of proportional hazards regression (equation 2 in the text), splitting the sample between investment-grade and non-investment-grade issues. The dependent variable is the 'baseline' hazard based on the duration measured in months. For a defaulted bond the duration is the period from the issue date to the date of default. For an undefaulted bond the duration is the period from the issue date to the date of repayment. For performing bonds at the December 31, 2002 (the end of our observation period), in Panel A we define the duration as equal to the the original maturity (thus assuming no other default after the end of our observation period), while in Panel B we define the duration as the period from issue date to December, 31 2002 (thus controlling for censoring). Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). White (1980) heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent.

	Panel A: For performing bonds at Dec, 31 2002, the duration is equal to the original maturity		
Variables	Investment Grade	Non-Investment Grade	Difference test
Bank Underwriting	-0.423	0.613 *	6.14 **
	(0.271)	(0.319)	
Size (log value)	0.240 ***	0.336 *	0.18
	(0.078)	(0.195)	
Gross spread	0.004 ***	0.002	1.23
	(0.001)	(0.001)	
No. of Observations	4,588	1,012	
R-Square			

	Panel B: For performing bonds at Dec, 31 2002, the duration is equal to the period from issue date to Dec, 31 2002		
Variables	Investment Grade	Non-Investment Grade	Difference test
Bank Underwriting	-0.413	0.487	5.71 **
	(0.267)	(0.340)	
Size (log value)	0.275 ***	0.190	0.21
	(0.067)	(0.162)	
Gross spread	0.003 **	0.002 **	0.34
	(0.001)	(0.001)	
No. of Observations	4,788	1,021	
R-Square			

Table 6

Effect of Type of Underwriter on Security Defaults – Matching Model

The table presents the results of a matching logit regressions of the probability of default of securities underwritten by investment houses and commercial banks (equation 3 in the text), splitting the sample by year of issue. The routine we used for estimations is PSMATCH2, a Stata module by Leuven and Sianesi. (2003). The dependent variable is a dummy taking the value of 1 if the security defaults between January 1, 2000, and December 31, 2002. Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings ("treated" observations) are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). Standard errors (reported in parentheses) are computed by bootstrapping, with 200 repetitions. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent (significance is computed by using the bias-corrected confidence interval).

Panel A: All Securities			
Variables	Treated	Controls	Difference
Average treatment effect on the treated	0.035	0.033	0.002 (0.010)
No. of Obs. (common support)	1,240	4,524	
No. of Observations	1,263	4,600	

Panel B: Investment-Grade Securities			
Variables	Treated	Controls	Difference
Average treatment effect on the treated	0.023	0.024	-0.001 (0.009)
No. of Obs. (common support)	1,061	3,648	
No. of Observations	1,073	3,715	

Panel C: Non-Investment-Grade Securities			
Variables	Treated	Controls	Difference
Average treatment effect on the treated	0.110	0.049	0.060 ** (0.037)
No. of Obs. (common support)	182	739	
No. of Observations	183	797	

Table 7

Effect of Type of Underwriter on Security Defaults – Logit Model (sample split between high-yield and low-yield securities)

The table presents the results of logit regressions of the probability of default of securities underwritten by investment houses and commercial banks (equation 1 in the text), splitting the sample between high-yield and low-yield securities. The dependent variable is a dummy (1 if the security defaults between January 1, 2000, and December 31, 2002). Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). White (1980) heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent

	Panel A:	Panel B:	Panel C:
Variables	Low-Yield Securities (spread over benchmark either lower than or equal to 210 bp)	High-Yield Securities (spread over benchmark higher than 210 bp)	Difference test
Bank Underwriting	-0.539 **	0.674 **	7.64 ***
	(0.261)	(0.326)	
Size (log value)	0.306 ***	0.218	0.23
	(0.061)	(0.164)	
Gross spread	0.004 *	0.002	0.63
	(0.003)	(0.001)	
No. of Observations	4,316	970	
R-Square	0.206	0.160	

Table 8

Effect of Market Entry on Security Defaults

The table presents the results of logit regressions of the probability of default of securities underwritten by investment houses and commercial banks (equation 1 in the text), splitting the sample by year of issue. The dependent variable is a dummy (1 if the security defaults between January 1, 2000, and December 31, 2002). Variable sources are described in the notes to tables 1 and 2. Investment-grade issues are those classified between Aaa and Baa3 by Moody's. Bank underwritings are those by one of the Section 20 subsidiaries listed in Cornett et al. (2002). The regression also includes calendar year, industry and rating dummies (not reported). White (1980) heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent.

Panel A: All Securities			
Variables	1991-95	1996-1999	Difference test
Bank Underwriting	-0.300	0.002	0.35
	(0.421)	(0.286)	
Size (log value)	0.470***	0.251***	1.69
	(0.140)	(0.094)	
Gross spread	0.004***	0.003**	0.22
	(0.001)	(0.002)	
No. of Observations	2,637	2,443	
R-Square	0.132	0.245	

Panel B: Investment-Grade Securities			
Variables	1991-95	1996-1999	Difference test
Bank Underwriting	-1.364	-0.338	0.80
	(1.088)	(0.353)	
Size (log value)	0.605***	0.251**	2.72*
	(0.182)	(0.113)	
Gross spread	0.010***	0.004	1.73
	(0.003)	(0.003)	
No. of Observations	2,003	2,037	
R-Square	0.239	0.283	

Panel C: Non-Investment-Grade Securities			
Variables	1991-95	1996-1999	Difference test
Bank Underwriting	0.326	1.157**	1.60
	(0.474)	(0.526)	
Size (log value)	0.210	0.495	0.67
	(0.279)	(0.335)	
Gross spread	0.002	0.003	0.01
	(0.002)	(0.002)	
No. of Observations	519	281	
R-Square	0.097	0.212	

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